

CLAIMS

What is claimed:

1. An electric motor comprising:

a housing;

a plurality of stator magnets secured to the housing and located in at least two circular arrangements, for each arrangement odd magnets having north on a first side and south on a second side and even magnets having south on the first side and north on the second side, the arrangements having a common axis and magnetic field lines forming in one direction across a first rotor gap from each odd magnet of the first arrangement to each odd magnet of the second arrangement and across a second rotor gap from each odd magnet of the second arrangement back to each odd magnet of the first arrangement, and in an opposing direction across the second rotor gap from each even magnet of the first arrangement to each even magnet of the second arrangement and across the first rotor gap from each even magnet of the second arrangement back to each even magnet of the first arrangement;

first and second rotor components located in the first and second rotor gaps respectively;

a link which secures the rotor components to one another to form a rotor, the rotor being mounted to the housing for rotation about the axis; and

first and second electrical conductors secured to the first and second rotor components respectively, the first conductor having a section located in the first rotor gap and extending transverse to the magnetic field lines so that a current therein causes rotation thereof about the axis, the second conductor having a section located in the second rotor gap and extending transverse to the magnetic field lines so that a current therein causes rotation thereof about the axis.

2. The electric motor of claim 1 wherein the second arrangement is axially spaced from the first arrangement.
3. The electric motor of claim 2 wherein the first rotor component is a planar member in a plane transverse to the axis.
4. The electric motor of claim 2 wherein the section of the first conductor extends substantially radially.
5. The electric motor of claim 4 wherein the first conductor includes alternating odd and even sections located in series and orientated such that current flows outwardly through odd sections and inwardly through even section.

6. The electric motor of claim 5 wherein there are as many odd sections as odd magnets of the first arrangement.

7. The electric motor of claim 2 wherein the link is located outside the arrangements and rotates about the arrangements.

8. The electric motor of claim 2 comprising a third of said arrangements, the magnetic field lines forming in the one direction from each odd magnet of the second arrangement across the second rotor gap to each odd magnet of the third arrangement, and in the opposing direction from each even magnet of the third arrangement across the second rotor gap to each even magnet of the second arrangement.

9. The electric motor of claim 8 wherein the housing includes a first end portion located on a side of the first arrangement opposing the second arrangement, a second end portion located on a side of the third arrangement opposing the second arrangement, and a core extending through the arrangements, the portions and the core providing a magnetic return path for the magnetic field lines.

10. The electric motor of claim 9 wherein the magnets are permanent magnets.

11. The electric motor of claim 1 wherein the magnets are electromagnets.

12. An electric motor comprising:

a housing;

a plurality of stator magnets secured to the housing and located in at least two row arrangements, for each arrangement odd magnets in a receptive row having north on a first side and south on a second side and even magnets having south on the first side and north on the second side, magnetic field lines forming in one direction across a first actuator gap from each odd magnet of the first arrangement to each odd magnet of the second arrangement and across a second actuator gap from each odd magnet of the second arrangement back to each odd magnet of the first arrangement, and in an opposing direction across the second actuator gap from each even magnet of the first arrangement to each even magnet of the second arrangement and across the first actuator gap from each even magnet of the second arrangement back to each even magnet of the first arrangement;

first and second actuator components located in the first and second actuator gaps respectively;

a link which secures the actuator components to one another to form an actuator which is mounted to the housing for movement relative to the housing;
and

first and second electrical conductors secured to the first and second actuator components respectively, the first conductor having a section located in the first actuator gap and extending transverse to the magnetic field lines so that a current therein causes movement thereof relative to the housing, and the second conductor having a section located in the second actuator gap and extending transverse to the magnetic field lines so that a current therein causes movement thereof relative to the housing.

13. The electric motor of claim 12 wherein the arrangements are circular arrangements having a common axis, the actuator is a rotor mounted for rotation about the axis and the currents cause rotation of the selections about the axis.